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CONTROL OF THE GREEN CLOVER WORM IN ALFALFA FIELDS

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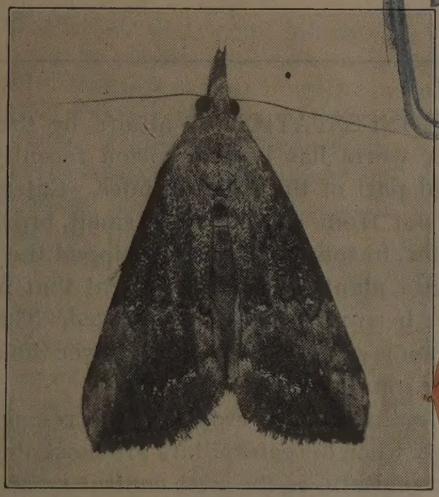

Parent of the green clover worm in resting position
Much enlarged

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SEVERE INFESTATION of alfalfa by the green clover worm has been reported recently from the central part of the United States. Caterpillars, hatching out from eggs laid by small brown and black moths, in some cases have stripped the foilage from alfalfa plants to such an extent that infested fields have been made to appear ragged. The green clover worm is generally distributed over the eastern half of the country.

Timely cutting of the crop so as to remove their food supply when the caterpillars are most abundant, with clean culture, is the best control measure. It may be supplemented by the use of the hopper-dozer when outbreaks are particularly bad.

CONTROL OF THE GREEN CLOVER WORM[1] IN ALFALFA FIELDS.

THE WIDESPREAD and severe infestation of alfalfa by the green clover worm classifies this insect as a serious alfalfa pest. Particularly heavy infestations have occurred recently in the vicinities of Wellington, Kans., Elk Point, S. Dak., Charleston, Mo., and in middle and eastern Tennessee. The caterpillar is nearly as voracious a feeder as the true alfalfa caterpillar,[2] and, should its natural enemies become much reduced, damage to alfalfa as serious as that done by the latter can be expected. Although for many years it has been known to occur commonly on clover and has received its popular name from this fact, its injury to this crop has rarely, if ever, been sufficiently serious to justify control measures.

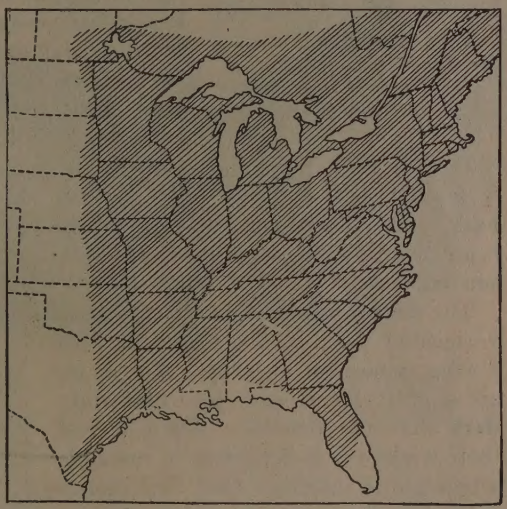

FIG. 1.—Map showing distribution of the green clover worm in the United States.

The green clover worm is generally distributed over the eastern half of the United States and southern Canada, as shown by the shaded area in the accompanying map (fig. 1). It usually confines its attacks to leguminous crops such as alfalfa, clover, soy beans, cowpeas, and vetch, but will feed readily on strawberry and blackberry plants and common weeds such as tickweed, cinquefoil, wild carrot, giant ragweed, and smartweed. It seldom if ever attacks corn or grasses of any kind.

[1] *Plathypena scabra* Fabricius.

[2] *Eurymus eurytheme* Boisduval.

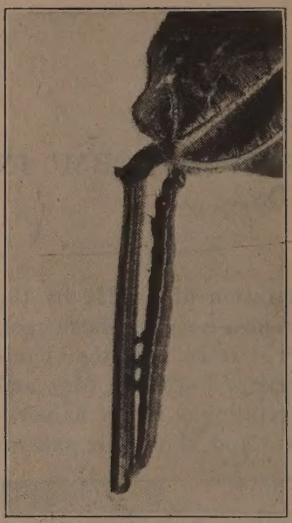

FIG. 2.—The green clover worm: Larva, caterpillar, or "worm," feeding on alfalfa. Somewhat enlarged.

In its development the insect passes through four stages: (1) The egg; (2) the larva, caterpillar, or "worm"; (3) the pupa, chrysalis, or resting stage; and (4) the adult, or moth.

The eggs are circular, somewhat flattened, a little smaller than the head of a pin, and green, closely matching the alfalfa leaf. Examination under a lens discloses numerous fine lines crossing the egg from vertex to base.

The caterpillar (fig. 2) is a green worm with one narrow white stripe and a second fainter white line on each side, varying in distinctness with individuals. It bears only four pairs of false or prolegs instead of five as in the case of the true alfalfa worm, and its body is much more slender and tapering. Its length varies from about an eighth of an inch with newly hatched larvæ to 1¼ inches for fully grown specimens.

In the pupa or resting stage (fig. 3) it is dark brown, about half an inch long, and pointed at one end, which bears two tiny, curved spines and other smaller ones.

The mature insect or moth (fig. 4) is variegated dark brown to black, with a wing expanse of 1¼ inches. The males are slightly larger and more uniformly dark than the females. When at rest their wings are so folded as to resemble a triangle in outline. (See title page.)

During the day the moths stay in hiding, usually in the field, often on the walls of barns, or even in tree tops. At dusk they become active and can be seen flitting from plant to plant in the field. Their flight is zigzag and undulating, and on alighting they dart quickly to cover. When suddenly disturbed they sometimes feign death, drop down, and then crawl rapidly along the ground to escape danger. In the fall of the year

FIG. 3.—The green clover worm: Pupa or chrysalis. Much enlarged.

they may be found congregated about barns or haystacks, as the winter is usually passed by the moths in protected places of this sort.

The female moth lays between 200 and 600 eggs in the course of her life, distributing the laying period over several days. The eggs are laid singly on the under side of the food-plant foliage, usually not more than two or three to a leaflet, and owing to their small size, and the color, which blends with that of the leaf, they are difficult to find. They hatch into caterpillars in about four days.

The caterpillar casts its skin five times before attaining full growth. Figure 5 shows its relative size in each instar or period between molts. It is restless, seldom feeding long on one leaf, and when disturbed it drops quickly off the plant. Thus the injury is scattered, and badly infested fields are left ragged in appearance. Caterpillars

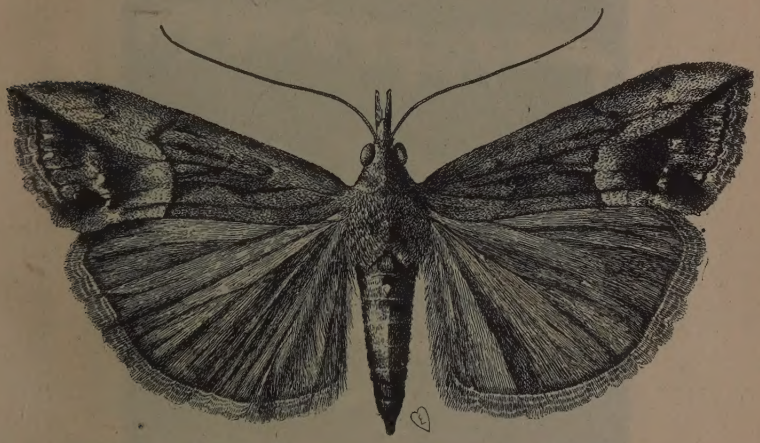

FIG. 4.—The green clover worm: Adult or moth. Much enlarged.

can stand a great deal of cool weather and even an occasional light frost, but continued frost will kill them in a few days. The entire larva or caterpillar period lasts about four weeks, and at the end of this time the caterpillar crawls to the ground, where, on or just beneath the surface, it spins about itself a loose, oval case or cocoon of dirt particles or débris webbed together (fig. 6). Here it changes into the pupa and later to the moth.

When just formed the pupa is pale yellowish-green, but shortly it turns to yellowish brown, and eventually to nearly black. The pupa stage lasts about eight days in ordinary summer weather, but is greatly prolonged during cold weather, and the winter may be passed in this form.

There are three or four generations a season, which allows ample time for this insect to increase rapidly in the course of a summer. In Tennessee there are four well-marked generations, while farther

north this number decreases to three or even two. The winter usually is passed in the adult stage, but there is evidence that the pupæ also may survive the winter.

The caterpillars each year are killed in considerable numbers by small insects which parasitize them, of which several different kinds have been found. Reliance, however, should not be placed upon them to protect the alfalfa crop.

CONTROL OF THE GREEN CLOVER WORM IN ALFALFA FIELDS.

A heavy infestation of this insect in alfalfa is most satisfactorily controlled by regulating slightly the time of cutting in order to mow

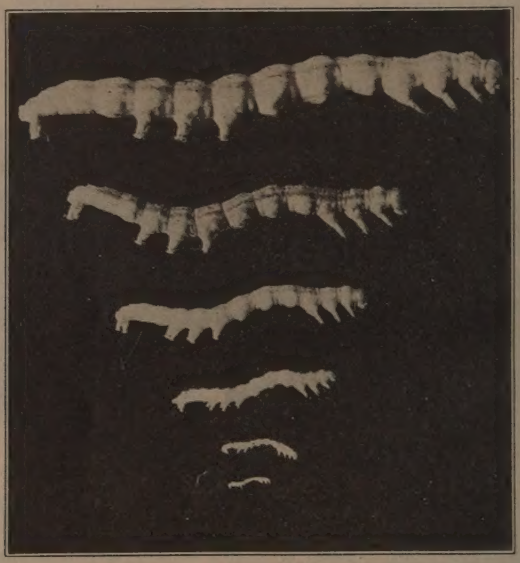

FIG. 5.—The green clover worm: The six different stages of growth of the caterpillar Enlarged.

the field while the insect is in the caterpillar or "worm" stage of growth.

When this insect is seriously abundant there will be (1) a ragged appearance of the alfalfa, caused by the feeding of the caterpillar; (2) the caterpillars will be very abundant on the plants at intervals throughout the season; and (3) the black moths will be so plentiful at intervals as to dart up in great numbers as one walks through the fields—and at this time the presence of this insect is most easily recognized. Eggs laid by the moths hatch quickly, and the caterpillars feed on the plants for three weeks or longer before going to the ground to pupate.

In order, therefore, to time the cutting to catch these caterpillars, (1) watch for a noticeable outbreak of the moths, (2) mow the field during the period from ten days to three weeks after the time of their appearance in great abundance, and (3) cut the entire field closely and leave it as clean and bare as possible. This removes the food supply of the caterpillar and any shelter protecting them from the direct rays of the sun, thus hastening their destruction. On account of the wide range of food plants for this caterpillar, ditch banks and fence rows should be kept free from weeds. Close and clean cutting also will help to destroy any other larvæ of moths or butterflies in the field, and has been recommended in the control of the alfalfa caterpillar.

FIG. 6.—The green clover worm: Cocoons or cases with the pupæ pushed partly out of two of them. Somewhat enlarged.

If these measures can not be carried out without injury to the alfalfa, either from premature cutting or a too prolonged delay, wait until the alfalfa is ready for another cutting. It ought to be possible, however, before the summer has passed, to clear the fields of this insect in this manner.

In the Eastern States premature cutting often results in permanent injury to alfalfa, especially while it is young, and for this reason the cutting of this crop much in advance of the normal period is not recommended for this region.

The caterpillars have been caught readily by dragging a field with a hopperdozer such as is used for grasshopper outbreaks. Since it does not hurt the alfalfa when not used to excess, and will catch many injurious insects such as grasshoppers and leafhoppers, this implement may be used to advantage in infested fields.